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The Commonwealth of Massachusetts

ANNUAL REPORT

OF THE

DIRECTOR OF ANIMAL INDUSTRY

FOR THE

YEAR ENDING NOVEMBER 30, 1920

DEPARTMENT OF CONSERVATION

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The Commonwealth of Massachusetts

DEPARTMENT OF CONSERVATION.

Division of Animal Industry,
Boston, Nov. 30, 1920.

To the Commissioner of Conservation.

By the provisions of chapter 350, General Acts of 1919, the Department of Animal Industry, organized and existing under authority of chapter 608, Acts of 1912, was placed in the Department of Conservation to serve therein as the Division of Animal Industry. This act went into effect Dec. 1, 1919, and I have the honor to present the following report of the work of this Division for the year ending Nov. 30, 1920.

The functions of the Division of Animal Industry and the duties of its officials may be described as follows: Inspection and examination of horses, cattle, sheep and swine within the Commonwealth, and of the conditions under which they are kept; the execution of measures in prevention, control or cure of contagious disease among them; the slaughter when necessary of such as are affected with, or which have been exposed to, contagious disease, followed by the burial or other disposal of their carcasses; the cleansing and disinfection of districts, buildings or places where contagion exists or has existed. Another duty under the law is the regulation of the shipment of horses, cattle, sheep and swine from other States to Massachusetts, in order that the prevalence of contagious disease may not be further increased by diseased animals from other communities. This regulation necessitates the mallein testing of many horses, and the tuberculin testing of all cattle over six months of age that are not intended for immediate slaughter or are not accompanied by a satisfactory record of test made by a veterinarian approved by the live-stock official of

the State from which they are shipped, and by officials of the United States Bureau of Animal Industry.

Successful dairying, as the production of milk, butter and cheese, the conservation of all kinds of animal food used for human consumption as meat, the commercial business of propagating, feeding and marketing cattle, sheep and swine, and of their by-products, such as leather, wool, fats, fertilizers, and many other articles of commerce, all depend in great degree upon the maintenance of health of those species. Preservation of the health of the people is also dependent in no small degree upon it, as is also fertilization of the soil necessary to successful agriculture.

Healthy live stock being recognized as so indispensable to all of these projects, the prevention, control and eradication of contagious disease among animals is an important public work, far-reaching in its influences, and affecting more or less directly the welfare and material prosperity of all the people.

The work of this Division directly in preservation of the public health lies in the suppression of such animal diseases as are communicable to the human subject, namely, glanders, bovine tuberculosis, rabies, anthrax, actinomycosis, etc. Some of these diseases are rapidly fatal to the human subject, and their transmission readily occurs if circumstances are favorable for it. It is very important, therefore, that this class of diseases be prevented, controlled or, if possible, eradicated from the animal kingdom.

Fertility of the soil is so dependent upon the keeping of live stock that the ratio of general crop production to the number of animals produced, raised and maintained upon our farms is an intimate one. Numbers are largely increased if contagious disease is effectively controlled; therefore, the intimate relation that effective work of this Division bears to successful agriculture may be readily seen.

There is no question as to the greater economy of raising and maintaining only such live stock as can be kept free from contagious disease, for the reason that healthy animals return to their owners a far greater revenue on the investment of time, labor and capital than do those among which disease prevails in any form or in any degree of intensity.

Each succeeding year there is an increased dependence of the public for food material upon domestic animals, as represented not only by dairy products but by meat value of the carcasses of cattle, sheep and swine. That these carcasses may be found fit for human food, it is necessary that the animals shall have been raised under proper sanitary conditions, and maintained free of contagious disease up to the time of slaughter. The carcasses of thousands of animals are yearly condemned on account of lesions of contagious disease being found at time of slaughter. It is an economic necessity of the State and Nation that this great waste be reduced to a lower point than has yet been reached. Although progress in this direction is yearly increasing through the active co-operation of Federal, State and municipal authorities, the Division of Animal Industry recognizes that its work of elimination of animal diseases has a broad field for expansion, and that its duty in relation to increased food supply for the people is well defined.

In accordance with the provisions of chapter 189, General Acts of 1918, this report will consist of a brief summary of the year's work of this Division, illustrated by charts showing the control work of recent years of some of the principal contagious diseases of animals. These charts will probably be of considerable interest to those who have been familiar with the workings of our organization during a period of years. They show the number of cases we have had to deal with, and the working out of policies that have been pursued, with such occasional variations as seemed advisable, for a considerable length of time.

Following is a gross summary of the work of the Division for the year ending Nov. 30, 1920: —

Cattle.

15,546 Massachusetts cattle were physically examined by Division agents.

1,924 Massachusetts cattle were tuberculin tested by Division veterinarians.

2,855 interstate cattle were tuberculin tested by Division veterinarians.

9,736 tested interstate cattle were examined at Brighton and their test records viséed.

5,247 tested interstate cattle were inspected and identified at other points.

989 animals on 143 farms in 47 towns were given preventive treatment against blackleg.
263 animals on 12 farms in 6 towns were given preventive treatment against anthrax.
43 animals were given preventive treatment against hemorrhagic septicemia.
968 visits to unsanitary premises were made by district veterinarians.

Horses.

530 tests for glanders were made by Division veterinarians.
4,063 interstate horses were examined by Division veterinarians.
23 tests of whole stables were made by Division veterinarians.
11 animals were given preventive treatment against anthrax.

Dogs.

623 cases of possible rabies in dogs were investigated.

Sheep and Goats.

38 sheep were given preventive treatment against anthrax.
85 goats were given preventive treatment against hemorrhagic septicemia.

Swine.

51,505 head of swine were treated in prevention or cure of hog cholera.
15,965 head of swine were treated in prevention or cure of hemorrhagic septicemia.

Miscellaneous Diseases.

685 cases of miscellaneous diseases were investigated by Division veterinarians.

Bovine Tuberculosis.

The control and eradication of bovine tuberculosis in Massachusetts has for many years been a problem for serious consideration. Cattle owners, whether engaged in dairying alone, the production and marketing of animals for food purposes, or the propagation and sale of pure-bred animals as foundation stock, are all pecuniarily affected by the ravages of this disease, and suffer serious loss in consequence of its continued prevalence.

The dire significance of its possible transmissibility to the human subject may also be referred to as an additional reason for a continuous study of any and all methods of control that promise any degree of success.

The records of the Federal meat inspection service at the many different points in the country furnish the best indication of the prevalence of this disease, the control of which is a nation-wide problem and in no sense a local one. In the country as a whole, thousands of animal carcasses and parts of carcasses are annually condemned at time of slaughter on account of the lesions of this disease being extensive enough to render the meat unfit for human food. While accurate statistics of the number of carcasses of Massachusetts cattle so condemned are not available as a separate unit, no doubt they are of practically the same significance as are those of the country as a whole.

While the number of carcasses condemned at Federal-inspected abattoirs on account of this disease has gradually increased from year to year until recently, it is gratifying to know that for the past three years the number so condemned has shown a considerable decrease. This decrease has been largely due to the more active control work inaugurated by State authorities, and the active movement inaugurated in 1917 by the Federal government looking to eradication as a possibility in the course of time. These activities have been stimulated and seconded by the live-stock industry of the country, all branches of which finally realize the great economic losses caused by tuberculosis of live stock, and the alarming significance of its steady increase from year to year.

In Massachusetts for thirty years its regulatory live-stock officials have been engaged in carrying out such measures in the control of bovine tuberculosis as seemed to promise relief to such conditions of its prevalence as from time to time arose or were apparent. These measures have resulted in more or less success as far as limiting the spread of the disease is concerned. It has been felt, however, that its eradication or complete control, if ever such can be accomplished, will be brought about by nothing less than a nation-wide movement to that end, instituted by Federal authorities co-operating with State officials, and both organizations supported by the live-stock industry in all its branches, and by an aroused public sentiment on the subject of animal food from healthy animals only.

The general policy which has been pursued by the Division

in this work for the past three years is still in operation. This policy briefly stated is as follows: Tuberculin testing of all cattle arriving in Massachusetts from other States not accompanied by approved records of test, followed by slaughter of the reacting animals; annual examination by local inspectors of animals of all Massachusetts cattle and the premises on which they are kept, with a detailed report as to the health of the animals and the sanitary condition of the premises; quarantine of all animals suspected of being diseased, followed by an examination by a Division inspector not only of the suspected animal but of all other members of the herd in which it is found, with the slaughter of such as are found diseased; disinfection of the premises where diseased animals are found and a "follow-up" examination of the herd three months later; the same process of disinfection and re-examination of herd again carried out if additional cases are found; tuberculin testing of herds at request of the owners, under an agreement as to the disposal of the reacting animals.

In our opinion the present Massachusetts plan of searching out and disposing of clinical cases of tuberculosis, thereby removing the most active spreaders of the disease, is one of the most effective methods by which progress in its actual control is accomplished. The diagnostic value of the tuberculin test, carefully applied by competent men, is very generally recognized; it should be taken advantage of at every opportunity for the purpose of disclosing the non-clinical cases. Although not infallible even in the hands of most competent and careful veterinarians, satisfactory control of the prevalence of tuberculosis among our neat cattle is not possible without its aid.

The Division is giving its support to the Federal movement in eradication of bovine tuberculosis, and co-operating with national authorities in this work to the fullest extent possible under existing law.

The most prominent feature of the Federal movement is the "tuberculosis-free accredited herd" plan, upon which plan the movement largely depends for its indorsement by the cattle-owning public. Under this plan certain indemnity is paid for reacting cattle which are slaughtered, the owners of which have submitted their herds for official tests applied under Federal and State

supervision. This payment of indemnity, however, is contingent upon a like indemnity being paid by the State wherein the cattle are owned. Under existing Massachusetts law, indemnity can be paid by the Commonwealth only for cattle which are condemned by Division officials, such condemnation to occur as a result of physical examination, the use of tuberculin as a diagnostic agent being in most cases prohibited. As the majority of cattle reacting to a tuberculin test are not cases that can be readily condemned by physical examination, indemnity for such reactors cannot be paid by the State, and for that reason alone no Federal indemnity is available. The Massachusetts cattle owner, therefore, who desires to eradicate tuberculosis from his herd by slaughter of the reactors to an official test, finds himself denied both State and Federal indemnity as partial reimbursement for his losses, and consequently the work of eradication by the "tuberculosis-free accredited herd" plan has not progressed in this State to the extent it has in most other States of the Union, or to the extent it would if our laws were more favorable to its progress.

Believing that advantage should be taken of every factor which promises to be of any assistance in the eradication of this great scourge of live stock, the undersigned, as a member of a commission created by the Legislature of 1920 to study the situation regarding the prevalence of bovine tuberculosis in Massachusetts, will favor a recommendation for legislation providing for such amendment to our laws as will permit the payment of indemnity, under proper regulation, to owners of cattle whose animals are destroyed on account of having reacted to tuberculin tests applied under official supervision.

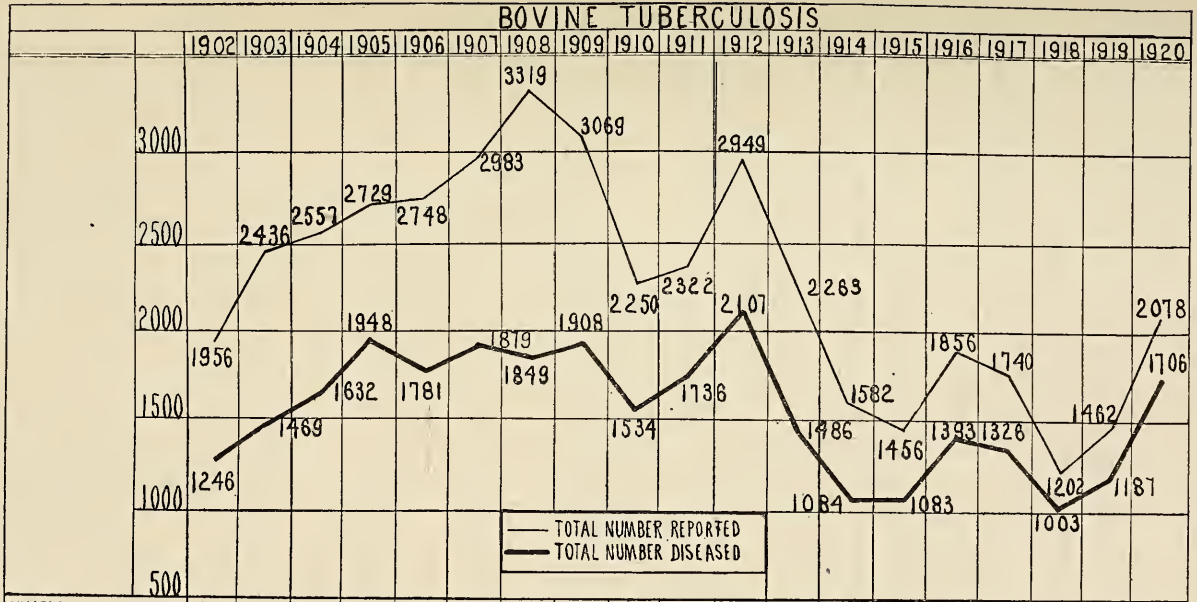
Such legislation will presume, for its proper execution, the expenditure of a considerable amount of money on the part of the Commonwealth. However, considering that such expenditure commands the award of an indemnity by the national government, and that the combined indemnities will be a great inducement to cattle owners to submit their herds for test, the ultimate effect will probably be to so reduce the prevalence of the disease in this State that the large annual appropriations to this Division now necessary for its control will be very much reduced, and ultimately by an amount large

enough to more than offset any appropriations for the execution of a law such as recommended.

Chapter 470, Acts of 1920, entitled "An Act relative to the Indemnity to be paid for Animals because afflicted with Tuberculosis," went into effect Aug. 18, 1920. By the provisions of this act, which is amendatory to section 6 of chapter 90 of the Revised Laws, the maximum amount which the Commonwealth may pay for a tuberculous animal is raised from $40 to $60. The immediate effect of this act has been to largely increase the number of cattle reported to this Division as suspected of being affected with tuberculosis. Under the former maximum payment of $40 it was often to the pecuniary advantage of an owner to send a suspected animal to slaughter without official condemnation, the salvage, in case the carcass was passed as fit for food, being greater than the maximum award by the State. We find now, however, that in many cases the situation is reversed, and, under the amended law, the money returns to the owner from the Commonwealth are greater than they would be from direct slaughter without official condemnation. The record of positive cases of bovine tuberculosis taken care of by this Division will for this reason show a very large increase in numbers this year. We do not believe that this indicates an increased prevalence of the disease, but rather that the amended law and the increasing popularity of the tuberculin test operate to bring more cases to our attention for disposal. We feel that we can in consequence more correctly estimate actual existing conditions of prevalence of this disease than was formerly possible.

Following is a chart showing for a period of nineteen years the number of cases reported to this Division and the number actually found diseased as proved by post-mortem examination, with marginal notes stating the methods of disposal.

This year's tabulation, as shown in the opposite chart, probably more nearly approaches a correct record of the prevalence of tuberculosis in our herds than that of any other one year. In addition to a diligent search for clinical cases as formerly, and the bringing to our attention of many more cases by the operation of the amended law increasing the indemnity payable by the Commonwealth, the tuberculin test reactors appear this



	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920
KILLED: LESIONS FOUND	1226	1441	1549	1880	1699	1819	1764	1807	1419	1631	1946	1345	1021	1052	1269	1017	755	791	1078
PERMIT TO KILL: " "	20	28	74	68	82	60	85	101	115	105	161	141	63	31	124	309	248	390	628
KILLED: NO LESIONS FOUND	81	121	110	116	152	301	375	243	151	161	231	263	174	121	128	78	29	41	70
DIED	66	54	68	78	66	80	68	73	57	80	62	52	36	58	51	33	41	44	74
RELEASED	563	792	756	587	749	723	1027	845	508	345	549	462	288	194	284	303	129	190	228
TOTAL	1956	2436	2557	2729	2748	2983	3319	3069	2250	2322	2949	2263	1582	1456	1856	1740	1202	1462	2018

year as a greater factor than ever before in our statistics, constituting a much larger portion of the total number of animals killed.

Comparing the last three years' records, we find the percentage of reactors to total number killed, as follows: 1918, 23.5 per cent; 1919, 28.1 per cent; 1920, 33.4 per cent. In other words, one-third of all the tuberculous cattle killed under our supervision this year were reactors to a tuberculin test and killed for that reason. Practically none of these cases could have been detected by physical examination.

Following are various tables showing the extent of the work of the Division in connection with the control of bovine tuberculosis in Massachusetts for the year ending Nov. 30, 1920: —

Massachusetts Cattle.

Cattle reported as diseased in 1919 disposed of in 1920, .	33	
Cattle reported as diseased during the year, . . .	2,069	
		2,102

Disposal of Above Animals.

	Killed, Lesions found.	Killed, No Lesions found.	Permit to kill, Lesions found.	Permit to kill, No Lesions found.	Died.	Released.	Forwarded to 1921.	Totals.
Reported by inspectors, owners, etc., .	1,070	10	65	30	74	228	17	1,494
Reacted to Division tests, ...	–	–	245	14	–	–	–	259
Reacted to private tests, ...	8	–	272	12	–	–	7	299
Reacted to United States tests, . . .	–	–	46	4	–	–	–	50
Totals, ...	1,078	10	628	60	74	228	24	2,102

The above table shows the disposal of Massachusetts cattle suspected of tuberculosis and reported from all different sources.

Following is a tabulation of tuberculin tests only, made by Division inspectors and reported by private veterinarians, showing also the disposal of such reactors as came under the jurisdiction of the Division and such as could be arranged for by consultation with owners: —

Department Tests.

Premises on which tests were made,	37
Number of animals tested,	1,924
Number of reactors,	496

Disposal of Reactors.

Killed, lesions found,	203
Killed, no lesions found,	10
Killed by owner, no killing order issued,	3
Awaiting action,	280

Note. — In addition to above, 46 animals which reacted in 1919 were killed, in 4 of which no lesions were found.

Tests reported by Private Veterinarians.

Number of herds in which animals were reported,	153
Number of animals tested,	3,631
Number of reactors,	758

Disposal of Reactors.

Slaughtered by owner, no record of post-mortem findings,	136
Condemned on physical examination,	8
Killed, lesions found,	247
Killed, no lesions found,	12
Showing no physical symptoms of tuberculosis, no record of disposal,	315
Awaiting action,	40

Note. — In addition, 25 animals reacting to test made in 1919 were killed and lesions found.

During the year Division inspectors physically examined 1,310 herds of Massachusetts cattle comprising 15,546 head, of which number 1,380 were killed and found diseased.

Interstate Cattle.

In accordance with present regulations of the Federal government, all dairy or breeding cattle shipped interstate, if over six months of age, must have passed a tuberculin test applied by veterinarians approved by the live-stock officials of the State where tested and by the chief of the Bureau of Animal Industry, United States Department of Agriculture.

A modification of this regulation has, however, been made applicable to cattle shipped to so-called "public stockyards" which are under the supervision of Bureau officials and where the animals can be tested upon arrival. On July 1, 1919, the Brighton cattle market was designated as "public stockyards," and such of the dairy or breeding cattle in the weekly shipments to that point as have not been tested before shipment are tested by inspectors of the Bureau of Animal Industry and of this Division working in co-operation. Check tests are also made from time to time on interstate cattle supposed to have been properly tested before shipment, in order that the quality of this work done in other States may be determined.

Additional quarantine stations for receipt of animals for Brighton market are maintained at Watertown and Somerville, at which points many of the cattle destined for that market are unloaded. The protection of Massachusetts cattle interests at these points is carefully attended to by our force of inspectors, and we feel sure that no cattle which can be suspected of tuberculosis are released for any purpose except for immediate slaughter.

Brighton stockyards being the only point in the State to which untested cattle may be shipped, in strict compliance with Federal regulations, our former work of testing at other points is reduced to a minimum and consists only of testing such animals as may arrive not accompanied by a record of tuberculin test. A few violations of the regulations occur, some of them through ignorance of Federal and State requirements, and others in willful disregard of them. These latter cases are investigated when reported and prosecution in the courts is instituted if deemed advisable.

Following are tabulations showing in detail the interstate cattle work of the Division at Brighton and other points: —

At Brighton Quarantine Station from Dec. 1, 1919, to Nov. 30, 1920.

Number accepted on approved records of test,	9,736	
Number received and tuberculin tested,	2,758	
		12,494

Disposal of Above Animals.

Number released on accepted records of test,	9,736
Number released on first test,	2,460
Number released on second test,	85

Number released on third test,	5	
Number died awaiting second test,	1	
Number released for slaughter on first test,	28	
Number released for slaughter on second test,	4	
Number condemned on physical symptoms,	1	
Number slaughtered on first test, lesions of tuberculosis found,	103	
Number slaughtered on second test, lesions of tuberculosis found,	37	
Number slaughtered on first test, lesions of tuberculosis not found,	23	
Number slaughtered on second test, lesions of tuberculosis not found,	8	
Number slaughtered on third test, lesions of tuberculosis not found,	1	
Number held awaiting disposal,	2	
		12,494

At Other Points from Dec. 1, 1919, to Nov. 30, 1920.

Number condemned in 1919 awaiting slaughter in 1920,	2	
Number held from 1919 awaiting test or other disposal in 1920,	37	
Number held from 1919 for retest or other disposal in 1920,	8	
Number received during the year,	5,342	
		5,389

Disposal of Above Animals.

Number released on accepted records of test,	5,247	
Number released on test made after arrival,	89	
Number reacted and held till 1921 for disposal,	2	
Number condemned in 1919, slaughtered in 1920, lesions of tuberculosis found,	2	
Number condemned, lesions of tuberculosis found,	4	
Number condemned, lesions of tuberculosis not found,	1	
Number slaughtered on "permit to kill" warrant, lesions of tuberculosis found,	1	
Number slaughtered by owner under Federal supervision, lesions of tuberculosis found,	4	
Number slaughtered by owner under Federal supervision, lesions of tuberculosis not found,	3	
Number remaining in State temporarily, no test required,	23	
Number held awaiting release or test,	13	
		5,389

Summary.

Total interstate dairy cattle received at Brighton station,	12,494	
Total interstate dairy cattle received at other points,	5,389	
		17,883

Origin of the Above Interstate Cattle.

Vermont,	5,254	
Maine,	6,207	
New Hampshire,	4,729	
New York,	1,040	
Connecticut,	173	
Rhode Island,	42	
Other States and Canada,	438	
		17,883

Animals other than dairy cattle requiring tuberculin test received at other points than the quarantine stations may be classified as below: —

Cattle not requiring Tuberculin Test.

Cattle for immediate slaughter,	1,916
Calves for immediate slaughter,	2,510
Dairy calves under six months old,	215
Cattle returned from out-of-State pastures,	377
Cattle pastured in the State during the season,	77
Feeder cattle,	72
Lost in mountains,	1
Unloaded for short stay on route through State,	29
Returned from temporary stay in other States for breeding purposes, etc.,	9
Remaining in State for brief periods only, for breeding purposes, etc.,	8
For temporary stay at sales or exhibitions,	843
Total,	6,057

There are large slaughtering establishments at Haverhill, West Newbury and Springfield where Federal inspection of slaughtered animals is maintained, to which points cattle and calves for immediate slaughter may be shipped without special permit, record of which is not kept by this Division. There are on an average several thousand animals shipped to these points annually, and it is estimated that at least 90 to 95 per cent of them come into Massachusetts from other States.

Fourteen permits allowing shipment of cattle into the State were brought over from the previous year, report on them not having been received before the close of that year. There were 1,171 permits issued during the year; on 29 of these no report has yet been received. It was found that cattle were brought in without permits in 146 instances, comprising 996 animals; 571 of these were accompanied by approved records of test; 48 were tested by Division veterinarians; 122 were Massachusetts cattle returned from pastures in other States; 26 were dairy calves under six months old; 28 were feeder cattle; 1 had been out of the State only temporarily; 1 was lost track of; 29 remained in the State temporarily; and 170 head were for immediate slaughter. These figures are all included in the statistical tables.

During the past year Massachusetts cattle owners were not allowed to send their cattle into the State of New Hampshire for pasturage upon certificate of physical examination only, that State requiring that such cattle be tuberculin tested before entering the State in accordance with the regular rules governing the interstate movement of cattle. The State of Vermont has not required the tuberculin test, but has allowed cattle to enter for pasturage only under rigid restrictions, requiring inspection and tagging before entering, and a strict accounting for before leaving the pastures in the fall. The State of New Hampshire takes the larger number of pasture cattle, a few going into Vermont and Maine. The records of this Division show that 99 head of cattle were tagged only, and 595 head were tuberculin tested by Massachusetts veterinarians, to be sent to pasture in other States. When returned to this State such cattle are accepted without further test, provided they can be checked up by their tag numbers.

At a sale of Ayrshire cattle held in Springfield in June, 45 animals came from other States, 17 of them being sold to remain in Massachusetts. At a sale of Hereford cattle in Worcester, which took place in May, 27 head came from out of the State, 15 being sold to remain. At the national Ayrshire sale occurring in Springfield in June, 34 head came from other States, 13 being sold to remain in Massachusetts.

At the Eastern States Exposition held in Springfield in the latter part of September, and a sale of Aberdeen-Angus cattle

held in connection therewith, 667 head were brought from other States, of which number 3 dairy cattle were sold to remain in Massachusetts, and 2 head were sold for immediate slaughter. At this exposition there were 74 exhibitors of cattle, 23 exhibitors of sheep, and 18 exhibitors of swine. There were 896 head of cattle exhibited; there were 39 head of baby beef and Junior Extension Department calves (calves previously given to boys for fattening with the intention of having them exhibited at the exposition), and there were 70 head of nurse cows on the grounds, making a total of 1,005 cattle at the exhibition. There were 395 sheep, 304 head of swine, and 293 horses on the grounds.

In point of numbers this exposition was the largest since the Eastern States began to hold these exhibitions, and the average grade of animals exhibited was the highest.

The Division keeps records of all animals received at the several quarantine stations, also the States from which neat cattle are shipped, as shown by the following figures: —

Receipts of Stock at the Watertown Stockyards for the Year ending Nov. 30, 1920.

New Hampshire cattle,	3,559
Vermont cattle,	5,968
Calves,	24,860
Sheep and lambs,	2,106
Swine,	3,353

Receipts of Stock at the New England Dressed Meat and Wool Company's Yards at Somerville for the Year ending Nov. 30, 1920.

Maine cattle,	2,374
New Hampshire cattle,	2,302
Vermont cattle,	7,150
Massachusetts cattle,	1,944
Western cattle,	3,555
Canada cattle,	514
Calves,	90,324
Sheep and lambs,	246,504
Swine,	927,100

Receipts of Stock at Brighton for the Year ending Nov. 30, 1920.

Maine cattle,	8,777
New Hampshire cattle,	8,441
Vermont cattle,	3,091

Massachusetts cattle,	13,168
New York cattle,	11,335
Western cattle,	36,138
Canada cattle,	356
Calves,	80,988
Sheep and lambs,	11,360
Swine,	42,407

Glanders.

The prevalence of this disease among the equine species has been satisfactorily controlled during the past year and the number of positive cases found is at nearly the same low figure as during the year 1919. The record for that year was so low that much doubt has since existed as to our ability to maintain it at anywhere near the same point. However, on account of this low record for two successive years we feel still more confident that we are on the way toward total extermination of this disease.

We realize the importance of complete control not only on account of the great economic loss which it causes to owners of the different types of horses used for farm work, general business purposes, exhibition, breeding, and as a means of recreation and pleasure, but also on account of the danger of its communicability to the human subject, nearly always causing death of the person infected.

Although the horse, as an aid to business and as a means of pleasure, has been to a great extent supplanted, he has been shown to be a really indispensable factor in the performance of the world's work, whether in times of peace or in war, and, what is of equally great importance, he is now of priceless value in the field of preventive medicine; that is, in the manufacture of the various sera now used in the prevention and cure of disease, especially in the human subject. He is, therefore, an animal which must still be produced in large numbers, and be maintained free from contagious disease if possible. Consequently we are actively engaged at all times in the suppression of glanders as the one principal disease of a contagious nature that affects horses, mules and asses.

The successful methods by which the number of cases of glanders has been rapidly reduced in the past few years, and which have apparently solved what was formerly a difficult

problem of disease control, may be briefly referred to as follows: —

Immediate quarantine of all reported cases; prompt killing of all clinical cases, followed by disinfection of the premises where kept, of the blacksmith shops where shod, and of watering troughs where they were in the habit of drinking; examination and re-examination of all contact animals, together with application of the several diagnostic tests when necessary; extension of the plan of testing whole stables; closing of public watering troughs in sections where an outbreak of the disease occurs; testing of all horses and mules shipped interstate from New York, New Jersey, Connecticut and Rhode Island, unless accompanied by satisfactory records of recent tests.

The records of the Division for the year ending Nov. 30, 1920, show the following facts: —

At the end of 1919, 8 horses were under observation. Of this number, 1 died and 7 have been released as free from the disease.

During the past year 124 suspected animals, in addition to the 8 mentioned above, have been examined. Of this number, 27 animals proved to be positive cases and were destroyed in accordance with the requirements of the law; 1 was killed by its owner, autopsy proving it to have been a case of glanders; 3 horses were killed at request of owners, post-mortem examination failing to show lesions of glanders; 1 State and 2 interstate horses were condemned and killed, no lesions of glanders being found on post-mortem examination, their full appraised value amounting to $225; 1 horse died before final diagnosis was made; 87 were released as free from the disease; and 2 were still held under observation at the end of the year.

In the so-called "stable tests," or tests of all animals in stables where glanders has been found, 243 horses have been tested in 23 stables; among them 1 case of glanders was found and 1 horse is still held under observation.

The above figures are all included in the tabulations which follow: —

Horses reported as Suspected.

Brought forward from the year 1919,		8
Reported by renderer,		3
Reported by inspectors, Division agents, veterinarians, owners, etc.,		122
Interstate, reported by inspectors,		2
Contact animals examined in stable tests,		243
		378

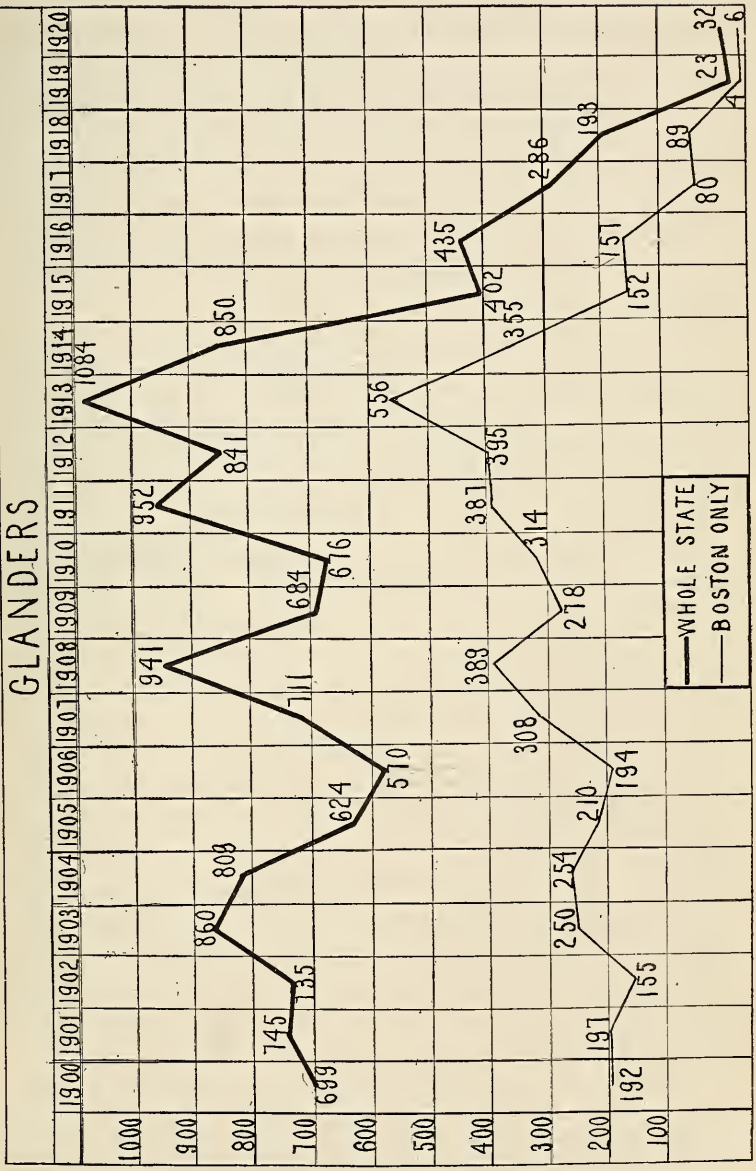
Disposal of Above Horses.

Appraised and killed, positive,	28	
Killed by owner, positive,	1	
Reported by renderer, positive,	3	
		32
Killed at owner's request, no lesions found,		3
Appraised and killed, no lesions found (2 interstate, 1 State),		3
Killed by owner or died, no lesions found,		2
Released as not affected with glanders,		335
Awaiting disposition,		3
		378

Following is a table giving the number of cases of this disease covering a period of twenty-two years. In this table cases which have occurred in the city of Boston are shown separately, on account of the fact that Boston was for many years the storm center of this disease. Special tabulation of the number of cases in that city has always been made in order that its relative importance to other sections of the State may be studied.

Number of Cases.

Year.	Cases.		
	In Boston.	In Other Places.	Totals.
1899,	159	384	543
1900,	192	507	699
1901,	197	548	745
1902,	155	580	735
1903,	250	610	860
1904,	254	555	809
1905,	210	414	624
1906,	194	376	570
1907,	308	403	711
1908,	389	552	941
1909,	278	406	684
1910,	314	362	676
1911,	387	565	952
1912,	395	446	841
1913,	556	528	1,084
1914,	355	495	850
1915,	152	250	402
1916,	157	278	435
1917,	80	206	286
1918,	89	104	193
1919,	4	19	23
1920,	6	26	32


GLANDERS
1900 1901 1902 1903 1904 1905 1906 1907 1908 1909 1910 1911 1912 1913 1914 1915 1916 1917 1918 1919 1920
1000
900
800
700
600
500
400
300
200
100
699 745 735 860 808 624 510 711 941 684 676 852 841 1084 850 556 435 402 355 395 381 314 308 388 278 210 194 197 192 155 151 152 286 193 89 80 23 32 6 4
WHOLE STATE
BOSTON ONLY

The Massachusetts Society for the Prevention of Cruelty to Animals, the Boston Workhorse Relief Association, the Animal Rescue League, and the branches of these various associations in many cities and towns of the State have through their agents always been of material aid to the Division in the work of controlling this disease. Their close observation of working animals of all classes has in the past, when the disease was more prevalent, brought to light many showing suspicious symptoms, which they have promptly reported to this Division, and many of the animals so reported have proved to be positive cases of the disease.

The constant activity of the humane societies in removing disabled animals from work and destroying those which, on account of extreme age or poor condition, are no longer useful has undoubtedly been a factor in the suppression of glanders, as such animals are very susceptible to infection.

The maximum amount, fixed by chapter 646 of the Acts of 1913, which may be paid for any one animal condemned and destroyed on account of being affected with glanders being $50, the appraised value of the animals condemned is a subject of considerable interest. Of the 32 positive cases of glanders occurring during the year, 28 were appraised at a total valuation of $3,370, the average amount per animal being $120.36. On the remaining 4 animals no appraisal was made for the following reasons: 3 of them were reported by a renderer and 1 was killed by owner, the disease being found on autopsy.

Of the 28 horses which were appraised, 22 have been paid for, the amount paid being $1,100; in 3 cases there was no award, as the horses had not been in the Commonwealth the required length of time; and 3 cases are awaiting the filing of claims for payment.

Complement-fixation Test.

Of the 8 horses under observation at the end of the year 1919, 2 were released without further test, 1 died, and 5 were subjected to the complement-fixation test, with the result that they were released as probably free from the disease.

Two hundred and twenty samples of blood were taken from

195 horses during the year 1920, and the following disposal of the animals was made: —

Animals held over from 1919, disposed of as above,	5
Animals released on first test,	145
Released on second test,	18
Died or killed by owner after first test,	4
Condemned on first test,	18
Condemned on second test,	2
Condemned on third test,	2
Held for further observation after second test,	1
	195

Ophthalmic-mallein Test.

This test has been applied to 310 State and 619 interstate horses during the year. It happens that the test in some instances was repeated on the same animals, and 938 such tests have been made. The results are as follows: —

Tests giving positive reaction,	13
Tests giving no reaction,	910
Tests giving unsatisfactory results,	15
	938

Interstate Horses.

Horses, asses and mules shipped to Massachusetts from the States of New York, New Jersey, Connecticut and Rhode Island must be accompanied by a permit from the Director of Animal Industry. This regulation was established on account of the prevalence of glanders among the horses of the States mentioned, and in order that upon arrival the animals might be immediately located and examined by agents of this Division.

The number of horses, mules and asses shipped from these States has decreased from 4,168 in the year 1919 to 4,082 in the year ending Nov. 30, 1920, the statistics following: —

Equine Animals from New York, New Jersey, Connecticut and Rhode Island.

Mules,	5	
Horses,	4,077	
		4,082

Disposal of Above Animals.

Released upon physical examination,	3,442	
Released upon accompanying papers without examination,	5	
Released after test,	619	
Released on route to other States,	14	
Reacted to test, killed, no lesions found,	2	
		4,082

It is worthy of notice that no interstate horses or mules were found during the past year to have been affected with glanders. Many of the animals brought from the above-mentioned States are of the better class, being highly bred horses used for carriage work and breeding purposes. The second-hand horses, which are trafficked in and sent from the markets of one State to those of another for purpose of public sale, have been specially watched on account of their being considered more liable to be subjects of contagious disease than the higher class animals, and if not accompanied by a satisfactory certificate of test have been tested on arrival by inspectors of the Division.

Rabies.

All species of domestic animals are susceptible to rabies, it is readily communicable to man, and a high rate of mortality always follows its development. For these reasons we realize the necessity for close observation on the part of town and State officials charged with its control.

An outbreak in any locality can generally be confined within reasonable limits if there is prompt notification given to local inspectors of animals or to this Division, so that the measures generally recognized as effective in its control may be at once put into operation. In its spread from one locality to another, the dog is *alone* the factor, unless the possibility of its being continuously prevalent, to a greater or less degree, in wild animals is admitted, and that the contagion is readily transmitted to the dog running at large. The ownerless or stray dog is generally the first rabid animal to be found in any community, and the extent to which he may have spread the infection depends on how soon he has been apprehended after he developed the disease. No one being interested in the

whereabouts or physical condition of the ownerless dog, he becomes an active spreader of the disease before attention is centered on him. A more rigid enforcement of the dog laws would be of great assistance in suppressing this troublesome disease.

The quarantining of animals which are found to have been exposed to a suspected or positive case, their confinement and restraint, causes much inconvenience and in some cases considerable expense to their owners. When persons have been bitten by animals positively known to be rabid at the time, or subsequently proved to be infected with the disease, there follows in some instances more or less nervousness on the part of the people; also considerable monetary loss occasionally occurs by the death of valuable dogs or other infected animals.

While dogs are the animals which are principally the victims of this disease, a few cases yearly occur in horses, cattle, sheep, swine or cats, the source of which can generally be traced to the canine animal.

Division records this year show a larger number of cases reported than in any year since 1916, when the lowest prevalence for fifteen years was recorded, since which time there has been a gradual increase in their numbers. It is probable that we have not yet reached the peak of the upward trend of prevalence as yearly recorded, on account of the vast amount of contagion recently existing in near-by States, the invasion of Massachusetts by it having been forecasted in our reports for the past three years.

Local inspectors of animals are familiar with the situation, and those of border towns are specially advised as to the importance of early quarantine, thorough investigation and prompt detailed reports to this office.

Following is a general outline of the Division's present methods in rabies control work: —

Upon report being made to the Division that a person has been bitten by a dog, the inspector of animals of the town or city in which it occurs is ordered to make an examination of the animal, and, even if it appears to be healthy, to have it restrained for a period of fourteen days for the purpose of observation. The restraint for this length of time is deemed necessary for the reason that competent authorities have

shown that in some instances the bite of a dog infected with rabies may communicate the infection fourteen days before the animal shows clinical symptoms. If at the end of this period no symptoms of rabies have developed, the animal may be released. In case a person is bitten by a dog which, upon examination by the inspector of animals or any other person, shows evidence of already being affected with rabies, or there is a history of its having been in contact with a rabid animal, the dog in either case is immediately confined in strict quarantine. If it is subsequently killed or dies, its head is at once sent to the Division's office, and a laboratory examination of the brain is made for the purpose of positively determining whether or not the animal was affected with the disease. Information as to the laboratory findings is promptly communicated to the person or persons who have been bitten. The State Department of Public Health is given the information received in every case of dog bite reported to this office, whether the bite has been inflicted by an animal suspected of rabies or not. We also order the local inspector of animals not only to ascertain the names of all persons who have been bitten by dogs suspected of rabies but to find out if animals have also been bitten, and if so to place the same in quarantine for a period of at least ninety days. All dogs which are found to have been in contact with a rabid animal, whether or not it appears that they have been bitten by it, are also placed in quarantine for the same period.

If an unusual number of cases of rabies is found to exist in any town or city, the selectmen or the mayor or board of aldermen are asked to issue a restraining order, under the provisions of section 158 of chapter 102 of the Revised Laws. Such an order obliges all dog owners to confine their animals to their own premises for a certain period, or take them therefrom only on leash. This restraining order is much more effective in the local control of an outbreak than is an order which compels owners to muzzle the animals only but not restrain them, as a muzzled animal let loose may in some way get the muzzle off and bite other animals or people. A muzzled dog at large may therefore become much more dangerous than an unmuzzled one which is at all times confined upon

owner's premises or taken therefrom only on leash. Dogs found running at large while a restraining order issued by town or city authorities is in force may be killed on the issuance of a warrant for the same to a police officer. It was found advisable to ask for general restraining orders in fifteen towns of the Commonwealth during the past year. These orders were for periods of ninety days.

Our force of district agents, all of whom are veterinarians and located in different parts of the State, together with the local inspectors of animals, of whom there is one or more in every city and town of the State, constitutes an organization by which systematic local control of an outbreak of this disease can generally be accomplished within a reasonably short time.

During the year ending Nov. 30, 1920, 769 animals were reported to the Division for diagnosis, observation or quarantine on account of the prevalence of rabies, and 28 were brought forward from the year 1919. The records have been classified as follows: —

Animals suspected of rabies, primary cases, ... 171
Animals exposed to rabies (26 reported in 1919, 385 in 1920), . . 411
Animals which have inflicted bites upon persons (2 reported in 1919, 213 in 1920), ... 215

Animals suspected of Rabies, Primary Cases.

	Dogs.	Cattle.	Cats.	Swine.
Diagnosis positive, ...	121	3	1	–
Diagnosis negative, ...	34	–	1	1
Diagnosis questionable, ...	8	–	1	1

Animals exposed to Rabies.

	Dogs.	Cattle.	Cats.	Swine.	Horses.	Drake.
Number released after a quarantine of ninety days.	148	36	2	102	4	1
Number killed, no symptoms having developed.	42	–	4	–	–	–
Number killed, positive symptoms having developed.	34	5	–	6	1	–
Number still held under observation,	25	–	–	–	1	–

Animals which have inflicted Bites upon Persons.

	Dogs.	Cats.
Number killed during quarantine, no symptoms having developed.	27	3
Number killed, no examination, ...	4	-
Number released after fourteen days' quarantine, . . .	178	1
Number still held under observation, ...	2	-

Of the 28 animals which were under observation at the close of the year 1919, 27 were released, no symptoms of rabies having developed. One, a horse, developed symptoms of the disease five months after contact with a rabid dog, and was killed.

The questionable cases given in the preceding table may be briefly referred to as follows: 3 dogs were killed by police officers, showing symptoms which they considered suspicious; 1 dog was found dead, 2 were killed, and 1 pig was killed, laboratory examination in all 4 cases being unsatisfactory; 1 dog was chloroformed by its owner, having shown suspicious symptoms; 1 dog, which had probably been exposed, disappeared; and in case of 1 cat no laboratory examination was made.

During the past year the Division received reports of 296 persons having been bitten by dogs, and 5 persons having been bitten by cats. Sixty-two of these persons were bitten by 26 of the dogs classified in the tables as positive cases. In all cases of dog bite which are reported, the dog is immediately quarantined for observation except in cases where the animal is immediately killed. Of the cases of dog bite reported, 231 were inflicted by dogs proved not to be affected with rabies. One case was that of a dog on which laboratory examination was questionable, and 2 cases of bite were by dogs which are still in quarantine for observation.

All persons bitten were officially notified of the results of laboratory examination of the brains of the rabid animals. Prompt notice was also given the State Department of Public Health, and it is probable that in many cases where examina-

tion gave positive results, the Pasteur treatment in prevention of rabies was administered to the persons bitten, either under supervision of health officials or by private physicians. Six dogs bitten by rabid animals were also given antirabic treatment.

It is deemed advisable, in all cases where possible, that the heads of animals supposed to be affected with rabies should be examined at the laboratory in order to confirm diagnosis. During the past year laboratory examination has been made of the brains of 149 dogs, 3 cats, 7 swine and 4 cattle. Of this number, 93 dogs, 5 swine and 4 cattle showed positive evidence of the disease.

Of the 769 animals reported for observation, diagnosis or quarantine during the year, 48 dogs were, as far as could be ascertained, ownerless and unlicensed, 29 of which proved to be positive cases of the disease.

One dog which was killed in April on account of being affected was known to have been bitten in August of 1919.

In another case, the disease developed 83 days after the animal was bitten.

A dog was killed in Townsend, Vt., in February, having traveled there from Ashby, Mass., a distance of approximately 100 miles. This dog prior to leaving Ashby was known to have bitten a dog at the same premises, which latter dog developed rabies in June.

In 1 case which proved to be rabies the dog had been brought into Massachusetts from Kansas City, Mo., a few weeks before the development of the disease. Upon inquiry it was found that rabies was very prevalent in that city about that time.

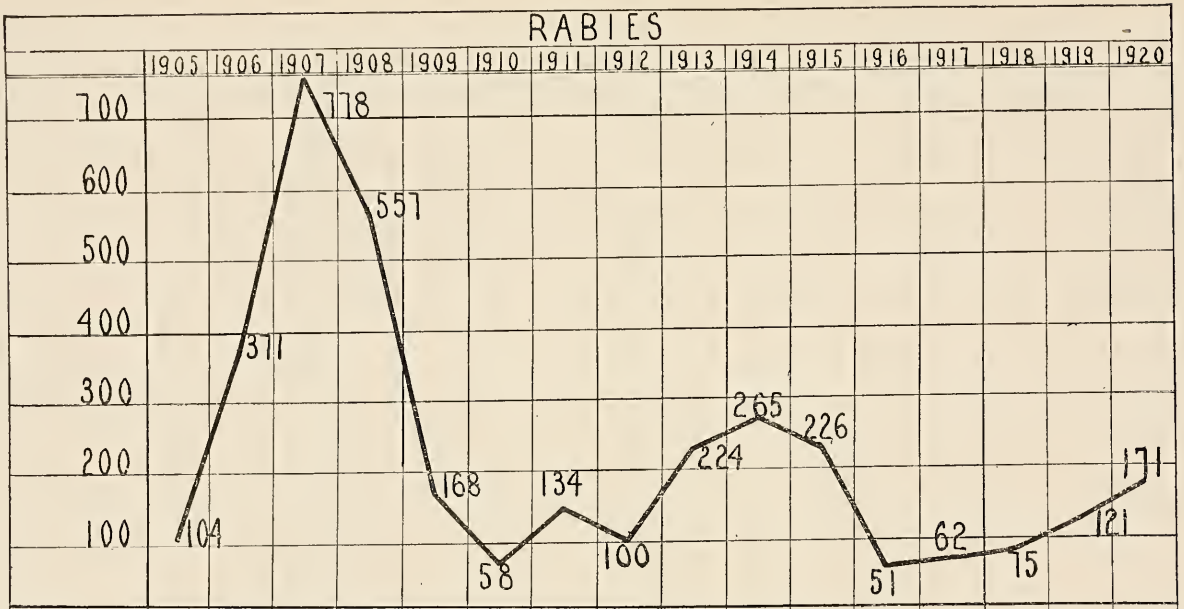
In one instance a Great Dane dog ran through five different towns, and was known to have come in contact with 12 other dogs, which were immediately quarantined, 5 of which later developed the disease.

The following table shows the number of positive cases of rabies by cities and towns: —

City or Town.	Dogs.	Cattle.	Horses.	Pigs.	Cats.
Arlington,	2	–	–	–	–
Ashby,	1	–	–	–	1
Athol,	1	–	–	–	–
Attleboro,	3	–	–	–	–
Barnstable,	1	–	–	–	–
Berkley,	2	–	–	–	–
Bolton,	2	–	–	–	–
Boston (Hyde Park 1, Roxbury 2),	3	–	–	–	–
Boylston,	1	–	–	–	–
Brockton,	10	–	–	–	–
Canton,	1	–	–	–	–
Dartmouth,	1	–	–	–	–
Dedham,	4	–	–	–	–
Douglas,	1	–	–	–	–
East Bridgewater,	2	–	–	–	–
Easton,	2	–	–	–	–
Fall River,	20	–	–	–	–
Fitchburg,	1	–	–	–	–
Foxborough,	–	1	–	–	–
Franklin,	1	–	–	–	–
Freetown,	1	–	–	–	–
Grafton,	1	–	–	–	–
Hanover,	3	–	–	–	–
Hopedale,	1	–	–	–	–
Hopkinton,	4	–	–	–	–
Lancaster,	2	–	–	–	–
Leicester,	1	–	–	–	–
Mansfield,	3	–	–	–	–
Medfield,	6	–	–	–	–
Medway,	1	–	–	–	–
Mendon,	1	–	–	–	–
Middleborough,	1	–	–	–	–
Millbury,	2	–	–	–	–
Millis,	3	–	–	–	–
Milton,	1	–	–	–	–
Needham,	3	–	–	–	–
New Bedford,	1	–	–	–	–
Newburyport,	1	–	–	–	–
Paxton,	1	–	–	–	–
Plainville,	–	1	–	–	–

City or Town.	Dogs.	Cattle.	Horses.	Pigs.	Cats.
Rehoboth,	1	–	–	–	–
Royalston,	1	–	–	–	–
Seekonk,	3	2	–	1	–
Sharon,	2	–	–	–	–
Somerset,	1	–	–	–	–
Stoughton,	1	–	–	–	–
Sutton,	1	–	–	–	–
Swansea,	4	–	–	5	–
Taunton,	16	–	1	–	–
Uxbridge,	1	–	–	–	–
Walpole,	3	–	–	–	–
Wayland,	1	–	–	–	–
Webster,	2	–	–	–	–
Wellesley,	1	–	–	–	–
Westborough,	1	–	–	–	–
West Boylston,	1	–	–	–	–
Westminster,	1	–	–	–	–
Weston,	1	–	–	–	–
Westport,	8	4	–	–	–
Westwood,	2	–	–	–	–
Weymouth,	1	–	–	–	–
Worcester,	3	–	–	–	–
Wrentham,	3	–	–	–	–
Totals,	155	8	1	6	1

Following is a chart showing the proved cases of rabies in the several species of animals covering the period from 1905 to 1920, inclusive.



	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920
DOGS	98	327	741	504	154	55	125	90	205	250	214	46	53	66	105	155
CATTLE	5	38	23	32	11	3	3	6	11	5	4	1	9	8	12	8
CATS			4	1			3	1	4	1	1	2			1	1
HORSES		6	6	5			3	2	2	1	4	2			1	1
SWINE	1		4	14	2				1	8	1				2	6
MISCEL				GOAT 1	GOAT 1			GOAT 1	GOAT 1		SHEEP 2			BRAKE 1		
TOTAL	104	371	778	557	168	58	134	100	224	265	226	51	62	75	121	171

Hog Cholera.

The reports from our annual inspection show that the number of swine found on the farms this year has reduced from 108,108, last year's record, to 100,982, a reduction of approximately 7,500 head, or 7 per cent. This is a much smaller decline than had been forecasted, but undoubtedly it will still further continue unless market conditions change for the better.

During the progress of the World War, when an increased production in this country of all kinds of animal products used for food became a vital necessity in order that the world supply of food might be maintained, the raising of swine was rapidly taken up by many people not previously engaged therein. They did this in many instances from patriotic motives alone, and the number of animals raised in one or two pig lots was larger by thousands than one would estimate. During these war years, therefore, the number of swine raised in the State was far beyond the average, but soon returned to normal when the stimulus of war conditions ceased to be operative.

Certain other conditions have this year operated to largely reduce the number of swine in the State. The high price of feed of all kinds continuing for the greater part of the year, during all of which time the market price of live hogs has steadily declined, are two conditions very discouraging to the swine owner who may be raising hogs for the market as a business project. For these reasons alone many persons formerly engaged in that business have suspended operations until market conditions shall have become more favorable. We consequently find this year that numbers of swine in the State have largely reduced, and that the average amount of contagious disease prevalent has declined in proportion.

The Division's work in prevention of disease in swine, which was commenced in 1914, was undertaken primarily on account of the existence of hog cholera, which disease prevailed to such an extent and carried such a high mortality rate that the raising of swine in any considerable numbers was a very un-

certain enterprise, especially so if their principal food was garbage, a proved carrier of this contagion.

Although it had been shown that garbage contained all the food elements necessary to proper growth of swine, and furthermore that in many communities it was a complete waste, not utilized in any economic way whatever, yet many were deterred from using it as a food for swine on account of what was a common experience, namely, an outbreak of hog cholera, which in many instances destroyed a whole herd.

The raisers of pure-bred swine also found the chances in their business greatly increased by the danger of this contagion, even though garbage was not fed.

For seven years the Division has been engaged in the immunization of swine against this scourge, with the result that the production and successful raising of this species on garbage as a food has been rendered a safe project, and the foundation stock as represented by pure-breds has been protected against a serious danger. The only thing necessary to success in all instances is the immunization of the animals while healthy, not waiting until the disease has appeared before applying for our service. The treatment is specifically in prevention of disease and is not a curative. While we always endeavor to save the animals which are sick, more or less deaths are bound to occur when the disease is actually present in the herd.

The objective striven for during the past seven years by the Division of Animal Industry's work in this line has already been reached, and we now unhesitatingly refer to it as a public sanitary control service of much importance, of great value to the live-stock industry, and a work directly in conservation of the people's food supply.

Following is a list of cities and towns in which hog cholera prevention work has been carried on during the year ending Nov. 30, 1920: —

City or Town.	Herds inoculated.	Inoculations.		
		Serum and Virus.	Serum only.	Total.
Abington,	2	20	40	60
Acton,	1	4	8	12
Adams,	2	40	0	40
Agawam,	7	114	58	172
Amesbury,	1	3	1	4
Amherst,	5	138	19	157
Andover,	4	39	5	44
Arlington,	1	6	6	12
Ashburnham,	2	2	0	2
Ashland,	1	2	1	3
Athol,	2	10	19	29
Attleboro,	3	109	60	169
Auburn,	18	80	86	166
Ayer,	2	287	460	747
Barnstable,	5	57	57	114
Barre,	1	0	13	13
Becket,	1	9	0	9
Belmont,	4	690	634	1,324
Berlin,	3	9	0	9
Beverly,	1	118	11	129
Billerica,	2	13	11	24
Bolton,	2	19	0	19
Boston,	7	675	577	1,252
Bourne,	1	28	6	34
Braintree,	4	73	89	162
Bridgewater,	1	257	154	411
Brockton,	5	639	718	1,357
Brookfield,	3	80	8	88
Brookline,	2	28	10	38
Burlington,	3	919	1	920
Canton,	2	58	57	115
Charlton,	1	40	20	60
Chelmsford,	3	36	0	36
Cheshire,	1	7	0	7
Chester,	1	19	1	20
Chicopee,	24	293	104	397
Clarksburg,	1	6	0	6
Clinton,	14	83	20	103
Cohasset,	1	2	23	25
Concord,	5	141	55	196
Dalton,	1	170	84	254
Dana,	1	4	0	4
Danvers,	1	239	186	425
Dartmouth,	3	79	42	121
Dedham,	4	62	14	76
Deerfield,	3	23	0	23
Dover,	3	69	27	96
Dracut,	1	7	0	7
Easthampton,	9	29	23	52
East Longmeadow,	6	43	50	93
Easton,	2	12	8	20
Enfield,	1	1	0	1
Fairhaven,	6	13	20	33
Fall River,	2	3	13	16
Fitchburg,	23	454	287	741
Foxborough,	2	80	186	266
Gardner,	19	219	263	482
Gill,	2	32	37	69
Gloucester,	7	382	198	580
Grafton,	6	171	186	357
Granby,	1	9	0	9
Greenfield,	4	163	60	223
Greenwich,	1	0	25	25
Groton,	1	6	6	12
Hadley,	2	5	6	11
Hampden,	2	17	0	17
Hancock,	1	6	0	6
Hanover,	1	0	8	8
Hanson,	1	9	0	9
Hardwick,	2	16	6	22
Harvard,	4	21	0	21
Harwich,	1	2	0	2

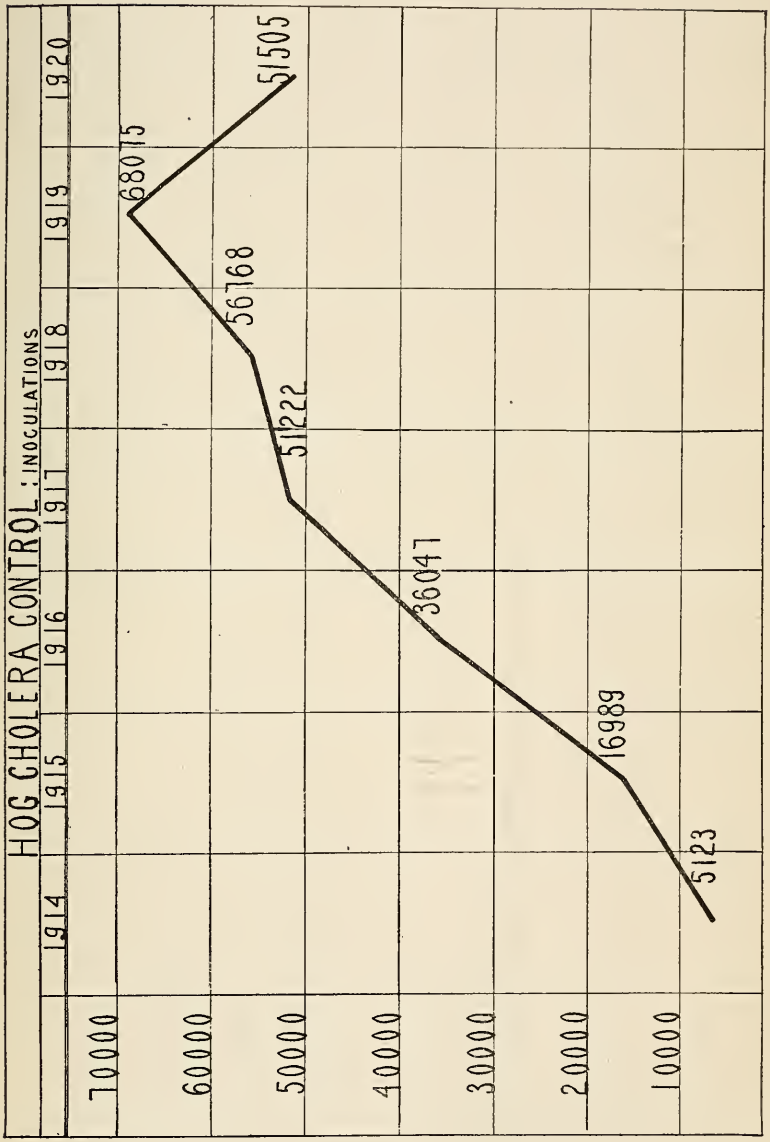
City or Town.	Herds inoculated.	Inoculations.		
		Serum and Virus.	Serum only.	Total.
Haverhill,	4	73	11	84
Holden,	3	27	17	44
Holliston,	1	17	0	17
Holyoke,	10	205	105	310
Hudson,	2	17	0	17
Huntington,	1	7	0	7
Ipswich,	4	49	143	192
Kingston,	1	1	0	1
Lakeville,	1	124	286	410
Lancaster,	8	34	8	42
Lanesborough,	1	12	2	14
Lawrence,	3	44	66	110
Lee,	4	15	10	25
Leicester,	2	28	32	60
Lenox,	1	58	17	75
Leominster,	1	113	109	222
Lexington,	17	2,420	1,466	3,886
Lincoln,	9	363	130	493
Littleton,	2	91	98	189
Longmeadow,	4	454	352	806
Lowell,	3	195	255	450
Ludlow,	6	368	234	602
Lunenburg,	2	138	39	177
Lynn,	2	43	14	57
Malden,	2	7	10	17
Manchester,	4	50	20	70
Marblehead,	10	195	78	273
Marion,	1	15	54	69
Marlborough,	2	15	9	24
Mattapoisett,	2	9	1	10
Medfield,	2	176	131	307
Medford,	2	10	0	10
Medway,	3	6	1	7
Melrose,	1	2	0	2
Methuen,	2	12	9	21
Milford,	6	36	61	97
Millbury,	5	113	115	228
Milton,	3	167	118	285
Monson,	1	33	66	99
Nantucket,	8	15	7	22
Natick,	7	239	180	419
Needham,	10	498	413	911
New Bedford,	2	83	151	234
Newbury,	3	13	0	13
Newburyport,	22	68	47	115
Newton,	3	94	20	114
North Adams,	4	398	210	608
Northampton,	15	364	184	548
North Andover,	1	3	0	3
North Attleborough,	3	103	99	202
Northbridge,	5	64	80	144
Northfield,	3	217	75	292
North Reading,	2	101	131	232
Norton,	2	36	30	66
Norwood,	2	9	70	79
Orange,	2	7	4	11
Oxford,	2	57	58	115
Palmer,	1	46	9	55
Paxton,	2	34	78	112
Peabody,	10	470	277	747
Pepperell,	1	3	0	3
Pittsfield,	29	680	340	1,020
Plymouth,	5	148	246	394
Princeton,	2	11	6	17
Provincetown,	40	83	5	88
Quincy,	1	0	20	20
Randolph,	2	17	27	44
Reading,	2	7	12	19
Rehoboth,	1	4	1	5
Revere,	6	1,101	788	1,889
Rockport,	3	30	9	39
Rowley,	2	11	0	11

City or Town.	Herds inoculated.	Inoculations.		
		Serum and Virus.	Serum only.	Total.
Russell,	1	6	0	6
Rutland,	3	57	75	132
Salem,	5	192	116	308
Salisbury,	2	5	1	6
Sandwich,	1	0	5	5
Saugus,	9	95	146	241
Seekonk,	12	650	475	1,125
Sharon,	4	0	12	12
Shelburne,	1	1	7	8
Sherborn,	3	62	45	107
Shirley,	1	125	142	267
Shrewsbury,	2	143	218	361
Somerset,	1	0	2	2
Somerville,	1	15	0	15
Southborough,	4	19	8	27
Southbridge,	3	0	20	20
South Hadley,	6	99	47	146
Spencer,	1	4	0	4
Springfield,	36	1,613	653	2,266
Stoneham,	1	14	0	14
Stoughton,	8	48	26	74
Sturbridge,	1	1	0	1
Sudbury,	1	52	2	54
Sunderland,	6	25	0	25
Sutton,	1	1	0	1
Swampscott,	1	29	6	35
Swansea,	5	1,606	708	2,314
Taunton,	5	275	198	473
Templeton,	7	20	63	83
Tewksbury,	1	171	150	321
Townsend,	8	16	14	30
Tyngsborough,	1	14	55	69
Uxbridge,	1	11	21	32
Wakefield,	5	7	0	7
Walpole,	1	0	8	8
Waltham,	16	1,540	1,196	2,736
Watertown,	3	200	161	361
Wayland,	1	2	0	2
Webster,	11	27	23	50
Wellesley,	2	33	18	51
Wenham,	2	27	8	35
Westborough,	3	191	133	324
Westfield,	8	57	87	144
Weston,	4	56	49	105
Westport,	1	3	0	3
West Springfield,	5	32	20	52
Westwood,	3	261	361	622
Weymouth,	5	3	53	56
Whately,	3	10	2	12
Wilbraham,	2	38	8	46
Williamstown,	1	9	0	9
Wilmington,	5	3	24	27
Winchendon,	7	46	46	92
Woburn,	8	180	171	351
Worcester,	20	3,822	2,729	6,551
Wrentham,	2	111	202	313
Totals,	874	30,280	21,225	51,505

The preceding table shows that work has been done in 200 cities and towns this year, 32 less than during 1919, but necessitating 1,675 visits by one or more inspectors. In addition there were 73 visits made to places where the swine were not treated for the following reasons: the animals in some instances had no chance of recovery; in others the trouble was

found to be some non-contagious infection; again in some of the cases proper sanitary conditions necessary to successful work could not be established; and in a few cases the owners did not desire to have the animals treated.

The chart on the opposite page shows in a general way the hog cholera prevention work from the time of its inception to the present, and comparative statistics in detail are shown in tables which follow it.


HOG CHOLERA CONTROL: INOCULATIONS
1914
1915
1916
1917
1918
1919
1920
70000
60000
50000
40000
30000
20000
10000
5123
16989
36047
51222
56768
68075
51505

Comparative Statistics on Hog Cholera Control Work for 1914, 1915, 1916, 1917, 1918, 1919 and 1920.

	1914.	1915.	1916.	1917.	1918.	1919.	1920.
Outbreaks reported in which a negative diagnosis was made, ...	20	122	57	42	39	54	41
Number of herds known to be infected, ...	80	227	253	359	232	184	89
Number of herds known to be infected in which serum treatment was not administered. [1]	–	77	43	77	75	35	42
Number of infected herds in which serum treatment was administered, . .	65	150	192	282	157	149	47
Herds infected at the Time Treatment was administered.							
Number of "serum only" treatments, including those administered to infected animals and to those too young for simultaneous treatment.	428	10,300	14,747	24,828	7,559	3,076	5,813
Mortality from hog cholera following "serum only" treatment (per cent), [2] .	9.5	7.0	3.70	1.75	3.90	5.5	1.27
Number of simultaneous treatments. These were administered to animals apparently healthy at time of treatment.	591	5,826	13,643	15,524	4,055	1,282	6,393
Mortality from hog cholera following the simultaneous treatment in infected herds (per cent). [2]	2.0	1.2	.60	.44	2.26	2.1	.33
Total number of treatments administered in infected herds, ...	1,019 [3]	16,126	28,390	40,352	11,614	4,358	12,206
Total mortality following both "serum only" and simultaneous treatment in infected herds (per cent). [2]	5.2	4.9	2.21	1.24 [4]	3.34	4.5	.78

Preventive Inoculation in Apparently Healthy Herds.							
Number of herds,	2	95	113 [5]	470 [5]	1,275	1,440	785
Number of inoculations,	104	863	7,657	10,870	44,754	63,717	39,299
Number of animals which died following simultaneous inoculations,	0	1	0	3	8 [6]	42 [6]	51
Total number of inoculations,	5,123	16,989	36,047	51,222	56,768	68,075	51,505

[1] Due to animals being too sick to treat, showing symptoms of secondary infection, or to owners not desiring the same.

[2] These figures show percentages, not animals.

[3] Plus 4,000 which were treated, and died or were killed before results could be ascertained. These deaths were due to the use of serum which was impotent and virus which was not virulent, before the present regulations were made.

[4] This does not include approximately 50 animals which died on one farm, on which a final diagnosis was not made. Clinically and by autopsies, it was impossible to determine whether the disease was hog cholera or hemorrhagic septicemia. Laboratory examinations indicate the latter, but before the work could be completed the losses stopped, and more material which was needed for a final diagnosis was not available.

[5] The large majority under this classification are herds which in previous years were classified as infected herds and which had yearly sustained heavy losses from hog cholera. The majority of them are garbage-fed, and experience shows that should treatments be discontinued an outbreak of hog cholera would follow very closely. They are therefore classified as herds in which no infection was apparent at the time of treatment, whereas in reality they are infected herds in which the disease is kept completely under control while treatments are continued.

[6] None of these animals were autopsied; consequently, we are unable to say whether or not death was due to cholera.

The preceding chart and tables of comparative statistics relating to our hog cholera control work show the following facts which should be briefly referred to: —

Very many less treatments with anti-hog cholera serum or hog cholera virus, applied either as "serum only" or "simultaneous" treatment, have been called for this year than during the year closing Nov. 30, 1919. In our opinion, this indicates an improvement in the general situation this year as to prevalence of the contagion. A similar diminution of cases has been reported to be the situation in all other sections of the country, 1920 being referred to as a "low year" as to incidence of the disease.

The tables also show that the number of herds positively known to be infected at time of treatment is lower this year than during any of the previous *five* years, and this decrease in number of infected herds is so very marked that it must be considered another very strong indication of improvement in the general situation.

Finally, the mortality rates, as shown in the statistics of work done in these infected herds, are so low as to merit particular attention, even in comparison with our own records of previous years. It may be said in passing that Massachusetts records in this particular, and in comparison with those of other sections of the country, have always commanded special attention and have brought forth much commendation as indicating a high quality of work done.

The sanitary conditions under which swine are kept, while found to be somewhat improved from year to year, are nevertheless far from what they ought to be. We have found in many instances where serious losses of animals have occurred that the primary causative factor has been unsanitary or poor housing conditions, which have lowered the vitality and the normal resistance of the animals to disease, allowing bacterial invasion a favorable opening. Such conditions also seriously handicap recovery from disease and delay the elimination of infection. While perfect sanitary conditions are hard to obtain in piggeries as generally managed, yet very great improvement can be made on many premises and would be followed by results which undoubtedly would be evident in more pigs, healthier pigs, and consequently a better financial showing.

At the present time the diseases of swine are probably receiving more attention on the part of swine raisers, veterinarians, live-stock sanitary officials and those engaged in scientific research than at any period in the history of control work in contagious diseases of animals. The ultimate result will undoubtedly be the solution of many of the control problems which now confront us.

By reason of our work in the control of hog cholera we have been brought in close touch with many other disease conditions, some of which are of serious menace to the raisers of swine. In their clinical aspects many so closely resemble hog cholera that differential diagnoses are difficult and only arrived at after considerable investigation both in the field and in the laboratory.

Hemorrhagic septicemia, necrotic enteritis, and various mixed infections have been more prevalent than usual this year, either as primary or secondary invaders often co-existent with hog cholera. Against these diseases, and to accomplish their prevention or cure, we are at all times at the service of swine owners, and are endeavoring to execute in this direction the best quality of work suggested by the present-day knowledge concerning these infections. Results in the main are highly satisfactory in a practical sense, as many thousands of animals are saved by treatment.

During the past year approximately 16,000 treatments in prevention or cure of hemorrhagic septicemia have been administered in the form of either sera vaccines or bacterins, singly or in combinations as deemed advisable, and the prospect is that this branch of our work will be actively continued the coming year on account of general recognition by swine owners of its value.

Miscellaneous Diseases.

Anthrax. — Although an extensive prevalence of anthrax has not occurred in Massachusetts for many years, there are recorded every year the deaths of a small number of animals from this disease. Our records show that in this State cattle and sheep are the species most commonly affected, and we have an occasional case in the horse. Nearly all species of domesticated animals are susceptible, however, and infection

of the human subject frequently occurs. The mode of transmission to man is generally by the handling of carcasses, hides or wool of animals which have been affected with the disease. We record this year one case of the disease in the human subject. The person affected was the owner of a number of cattle whose deaths from the disease had occurred at different times during a period of several months, which animals had been cared for by him and whose carcasses had been handled by him. He fortunately recovered.

On account of the danger of transmission of this disease to people it can be readily seen that we should be particularly anxious to limit its prevalence by every means at our command. All reported cases of an outbreak among animals are immediately investigated and subsequent action is taken as deemed advisable by the facts disclosed. Positive diagnosis is first necessary, and, as the animals generally either are found dead or die before arrival of a veterinarian or Division inspector, a post-mortem examination would ordinarily be depended upon to confirm the suspicions of anthrax. As post-mortem appearances in this disease are often not sufficiently characteristic to justify a positive diagnosis, and as the opening of a carcass allows the body fluids to escape and possibly spread the infection, it is advised that the suspected carcass be not opened, but that a specimen of blood be drawn from the cadaver on to a piece of glass and then allowed to dry in the air. If this specimen is not badly contaminated by careless preparation, and is promptly forwarded to a laboratory, there is no difficulty in determining whether or not anthrax bacilli are present.

A field diagnosis or suspicion of anthrax having been confirmed, preventive measures at once follow. They consist of proper disposal of diseased carcasses, disinfection of premises, and preventive inoculation of susceptible and exposed animals.

To prevent infection spreading from a carcass it should be burned or deeply buried, covered with quicklime. Anthrax bacilli or their spores if not destroyed may continue to infect soil for a long time; in many instances these organisms have been found to remain active for a number of years. We recommend that any contaminated ground be burned over and the surface area above a buried carcass be fenced and

burned over yearly. Any contaminated portions of buildings if wooden should be torn out and burned, and if concrete should be thoroughly disinfected.

The remaining animals of the herd should be at once removed to other buildings or areas, and the apparently healthy ones inoculated in prevention of the disease. Animals already affected are sometimes successfully treated, but ordinarily the disease runs such a rapid course that death takes place before the animal is noticed to be seriously sick, and our efforts are consequently limited to protection of the animals not showing symptoms. Although a certain percentage of deaths may reasonably be expected to occur among the inoculated animals, we find in actual experience that fatalities are very few.

Preventive inoculation is supposed to confer immunity for a period of at least twelve months. At premises where an outbreak has occurred and there is reason to fear permanent infection, it is advised that all susceptible animals be given a preventive inoculation each succeeding year for a certain period.

During the past year the disease has occurred in 11 head of cattle, 1 horse and 7 sheep on 4 different premises in 3 towns. Of these 19 animals, 2 were in the town of Conway, 13 in the town of Cummington, and 4 in Sheffield. The preventive inoculation has been applied to 263 head of cattle, 11 horses and 38 sheep on 12 different premises located in 6 towns.

In one herd of 29 cattle where the disease broke out and two immediately died, all the remaining animals were given preventive inoculation and no additional deaths occurred. In one herd of 40 cattle given preventive inoculation, 1 cow died within an hour. Reported anthrax in 4 instances proved upon investigation to be some other disease.

Blackleg. — This disease, more or less prevalent in many parts of the world and generally fatal, affects young cattle only, except in rare instances. It is readily prevented by a yearly protective inoculation of the susceptible animals. As it generally develops during the pasture season we recommend that the inoculations be made just before turning the animals to pasture in the spring. This service is rendered by the Division free of expense to cattle owners, and if it is called for at the proper season, or in case of outbreak among un-

treated animals it is promptly reported and the non-affected ones are thereupon inoculated in prevention of the disease, and then removed to other pastures, its prevalence is limited and the fatalities are few.

Blackleg is a disease generally contracted from infected soil and is seldom transmitted directly from animal to animal, differing in this respect from many other contagious diseases. Authorities agree that the bacilli seem to be capable of multiplying in the soil, and through their resisting spores to preserve their capacity of development and infectiousness even under unfavorable conditions. This, as well as the fact that bacteria from carcasses of dead animals again infect the soil, explains the fact that we always fear a yearly recurrence of the disease on certain farms, and consequently recommend preventive treatment of all young cattle pastured on premises where the disease has once existed.

During this year we have administered preventive inoculation to 989 animals on 143 farms in 47 towns, as tabulated below: —

	Premises.		Premises.
Ashburnham,	4	Montague,	1
Ashby,	9	New Marlborough,	1
Ashfield,	1	North Adams,	1
Athol,	2	Northampton,	5
Ayer,	1	Orange,	12
Becket,	2	Otis,	1
Blandford,	1	Peru,	1
Boxborough,	4	Pittsfield,	5
Brimfield,	1	Prescott,	1
Buckland,	1	Rowe,	7
Cheshire,	2	Royalston,	3
Chester,	3	Sandisfield,	5
Dalton,	1	Shelburne,	4
Fitchburg,	3	Southampton,	2
Gardner,	2	Templeton,	3
Great Barrington,	1	Townsend,	4
Greenwich,	2	Tyringham,	3
Harvard,	3	Warwick,	6
Holyoke,	5	Wendell,	1
Lee,	9	Westhampton,	2
Leicester,	1	Williamstown,	1
Leverett,	1	Winchendon,	1
Littleton,	7	Windsor,	1
Middlefield,	6		

The records show that our work this year has been done on 213 fewer animals than last year and on 5 fewer farms, the number of towns in which these farms are located being the same. The deaths reported are 15 head of cattle on 3 different premises, a reduction of 12 in the number of fatalities.

The same general recommendations as in anthrax outbreaks, regarding disposal of infected carcasses by burning or deep burial, followed by disinfection of contaminated areas or buildings, are applicable in outbreaks of blackleg.

Actinomycosis. — Eleven cases of this disease have been reported this year, located as follows: 1 each in Avon, Boston, Colrain, Harwich, Millis, Milton, New Bedford, Northfield and Scituate, and 2 in the town of Plymouth.

It is our custom to quarantine affected animals so that they may not be sold, but allow the owner to have treatment applied by a veterinarian, or to fatten them for slaughter. In a few cases recovery takes place and such animals are then released from quarantine.

Of the 11 cases on this year's record, 8 have been slaughtered, 2 have been released as recovered, and the remaining 1 is still held in quarantine.

Hemorrhagic Septicemia in Cattle. — This is a disease of very great prominence in some sections of the country, where it causes the sudden death of large numbers of cattle. Its prevalence in Massachusetts, however, is limited, and confined to isolated cases in widely separated localities. Our records show fewer deaths from the disease this year than last, 22 fatalities only being reported. These occurred in the towns of Berlin (3), Medfield (2), Templeton (9), Winchendon (4), and 1 each in the towns of Gardner, Hubbardston, Spencer and Wellfleet.

Preventive inoculation of all animals in a herd where the disease has appeared is generally successful in controlling its further extension, and we advise also that all animals be removed from a pasture where an outbreak occurs. This alone is sometimes sufficient to prevent further losses. Preventive inoculation has been administered to 43 head of cattle during the year.

An analogous type of hemorrhagic septicemia appeared in

a herd of goats in the town of Lexington, resulting in the death of six animals. The remainder of the herd, 85 in number, was given preventive inoculation, and no additional fatalities occurred.

Parasitic Diseases. — The study of animal parasites and their damaging effect on profitable live-stock raising is at the present time going on in a more intensive and scientific manner than ever before in the history of animal-disease control work. The result of this study is already being reflected in the increased attention given the subject by stock owners and veterinarians, and in their heeding of the convincing arguments as to the great economical waste resulting from the poorer growth of animals infested with parasites, either internal or external, and the lessened amount of their products.

The most prevalent parasitic condition which the Division has to deal with is that known as mange, which affects large numbers of cattle during certain seasons, and is also found prevailing to some extent among horses. While we have received reports of 421 head of cattle affected on 16 different premises, we know that this number is no indication of the number of animals infested, for the reason that many cattle owners do not take the trouble to report their cases.

Many owners also do not trouble to treat their animals, but successful treatment is possible if owners or attendants will faithfully carry out the local application of proper medicinal remedies. Treatment is not expensive, but is very inconvenient of application.

It is our custom to quarantine reported cases, if the animals are kept under conditions favorable to spread of the infestation, and particularly where owners or attendants cannot be depended upon to properly apply treatment. An increasing number of owners, however, now realize that it really pays to do everything possible to rid their animals of these parasites.

Thirty cases of the disease in horses have been reported during the year, from 5 different premises. Quarantined infested horses are generally allowed to work during treatment, but are forbidden to enter enclosures other than their own stables. Seven of the horse cases were detected on the ar-

rival of the animals from another State, and were at once quarantined. In one stable where infested horses and cattle were found, 3 dogs and 6 cats were also victims of these parasites.

Among the parasitic diseases met with is what is called "nodular disease" in sheep, not often fatal but greatly inhibiting the growth of the animals, especially the lambs.

Stomach worms were found to be the cause of the death of 75 sheep out of a flock of 100.

Foot-and-mouth Disease. — This disease fortunately has not appeared in Massachusetts during the past four years, although it has been reported from two different towns this year. Prompt investigation of these reports proved them to be unfounded. The disease has prevailed to an alarming extent in many foreign countries during the past year, and we have therefore considered the possibility of its appearance at any time in this country. The Federal authorities are carefully watching the situation and have formulated plans for immediate control work if the emergency occurs. In Massachusetts all Division veterinarians, inspectors of animals, and private veterinarians have been notified of the danger and asked to be constantly on the watch, and to promptly report any suspicious cases in order that they may be immediately investigated, and measures taken to at once prevent the spread of the disease. In one reported instance this year, occurring in a herd of 16 cattle, the symptoms shown by 2 animals sufficiently resembled foot-and-mouth disease to render it desirable to make inoculation of susceptible animals in order to arrive at a positive diagnosis. The inoculations all proved negative to this disease.

Bovine Infectious Abortion. — This disease has not as yet been especially designated as reportable by notification to cattle owners, inspectors of animals or veterinarians. Until additional knowledge pointing to the control of this scourge has been gained, whereby strictly official control methods would appear to be advisable, the functions of the Division officials must necessarily be limited to the giving of advice as to the general management of infected herds, and how to carry out the various sanitary measures recognized as essential

to progress in control of the disease. Without doubt its prevalence is quite extensive and its ravages are well known to every one engaged in dairying or breeding of thoroughbreds. The losses occasioned by it and by its many concurrent conditions are estimated to be second only to the losses from tuberculosis. It does not, however, seem advisable for the Division to enter the field of specific treatment of infected herds or individual animals, work which can probably be more satisfactorily attended to by the private veterinarian.

Other Infectious Diseases. — Twenty-two cases of tuberculosis in swine have been reported this year from 9 different towns. Undoubtedly this disease is more prevalent than these reports indicate; most of our reports come from slaughter houses where the disease is found at time of slaughter, and where the inspectors of slaughtering are interested to furnish us the information. As a tuberculous hog generally indicates tuberculous cattle as the source of the disease, it is our custom to examine all cattle on the premises from which the diseased hog comes.

Contagious disease of the eyes was reported as affecting an entire herd of 20 cattle on one farm. In a herd of 30 sheep, 9 were found also to have a contagious disease affecting their eyes.

Infectious pneumonia was reported in a lot of 10 cows, one of which died. Fourteen horses were affected with a contagious form of pneumonia in a stable of 100 animals, and 4 deaths occurred.

The Division has frequently been called upon to make examination of animals suspected of being affected with a contagious disease, and where it has been found that the animals were suffering from a disease not of a contagious nature. Among such instances the following may be mentioned: —

Twenty-three horses were taken suddenly sick immediately after being fed from a new consignment of oats, and 4 deaths occurred. Subsequent investigation showed that the car in which the oats were transported had contained castor beans

as the previous shipment, and this was probably the cause of the fatalities.

Forage poisoning caused the death of 3 cattle in Princeton, 5 in Middleborough, 5 in Wakefield, 3 horses in Hingham, 8 in Taunton, and 1 in Cohasset. Poison, the nature of which was not determined, caused the death of 6 dogs in Oak Bluffs, 1 cow in Rutland, 2 horses in Lenox, and 3 swine in Mattapoisett.

Other cases, in small numbers, were foot rot in cattle, enteritis, milk fever, paralysis of throat, cancerous growth, white scours, and malnutrition.

Laboratory Examinations.

Laboratory service is a necessary and important adjunct to successful work of any organization charged with the control and eradication of contagious disease among animals. It happens in many instances in the Division's work that a diagnosis cannot be positively made from the clinical symptoms shown by the animals, and as all the subsequent work in a case is formulated from the starting point of a correct diagnosis, the aid of the laboratory at this point becomes quite important.

The Division is most fortunate in having at its request the service of the bacteriological laboratory of the State Department of Public Health. Its service in our behalf has been most satisfactorily attended to, our entire work for the year having been efficiently and promptly performed.

The most important service has been the examination of the brains of 163 animals submitted because suspected of rabies, and in such cases a prompt and positive conclusion as to the existence or non-existence of the infection is necessary, especially so if persons have been bitten by the suspected animal.

Two hundred and twenty samples of blood taken from horses in our work of glanders control have been tested. In addition to these principal services, 56 specimens were examined, listed below by diseases suspected: —

	Positive.	Negative.
Anthrax,	3	18
Fatty degeneration,	1	–
Glanders,	–	3
Hemorrhagic septicemia,	8	8
Hodgkins disease,	1	–
Intestinal parasites,	3	–
Nodular disease,	1	–
Pneumonia,	2	–
Poisoning,	2	–
Ringworm,	1	–
Tuberculosis,	–	2
Tumor,	1	–
	23	31
Specimens too decomposed for diagnosis,	2	

Ten of the 21 specimens listed under anthrax were also examined for hemorrhagic septicemia, to which they were negative. One was also examined for blackleg and found to be negative. In addition to the above, 56 samples of blood from cows on 3 different farms were submitted for examination for bovine infectious abortion, 17 of which proved positive, 34 negative, and 5 questionable. One specimen which was recorded as positive for pneumonia was also examined for hemorrhagic septicemia. Two specimens were received in so decomposed a state as to make laboratory diagnosis impossible.

Annual Inspection of Farm Animals and Premises.

On receipt of the inspectors' reports in the Division's office they are carefully gone over, and the information which they contain is classified and tabulated in a way convenient for reference.

From this tabulation a fairly correct and comprehensive survey may be drawn of the general health conditions of the live stock on the farms of the State and the sanitary conditions under which they are kept. Its study is of value when formulating our general policies for disease control work and for the betterment of stable conditions.

Inspectors' reports also furnish the only correct "census" which is made of farm animals in the State, and in that connection are of interest and value not only to the Division and the Department of Conservation but to other State departments, also to individuals and associations interested in the breeding and raising of live stock, or engaged in any of the many lines of business closely related thereto.

In many instances cases of contagious disease not previously reported are found. Such are immediately quarantined and brought to the notice of Division officials and an important work in disease control is executed.

In many other instances unhealthful stabling conditions are brought to the attention of owners, and recommendations for improvement are suggested and insisted upon. If these are not attended to within a reasonable length of time, the cases are brought to the attention of Division officials who, either through the district veterinary inspector or through correspondence direct with the owner, endeavor to have them carried out. District veterinary inspectors have during the past year made 968 visits to premises where unsanitary conditions existed, and in a majority of instances full or partial correction of them has resulted.

It will be seen, therefore, that the annual inspection made by the local inspectors in cities and towns is a valuable aid to proper execution of the work imposed by law upon the Division of Animal Industry.

A gross tabulation of the reports of this year's inspection by local inspectors of animals follows: —

Total number of herds of cattle inspected,	30,039
Number of herds containing not over 5 dairy cows,	21,677
Number of neat cattle inspected,	226,800
Number of dairy cows inspected,	154,407
Number of herds found clean and in good condition,	28,928
Number of stables inspected,	30,746
Number of stables properly drained,	30,538
Number of stables well ventilated,	30,340
Number of stables sufficiently lighted,	30,031
Number of stables found clean,	29,422
Number of stables in which improvements were recommended,	821
Number of herds of swine inspected,	14,692
Number of swine inspected,	100,982
Number of herds of swine garbage-fed,	2,844
Number of swine garbage-fed,	52,219
Number of sheep inspected,	17,002
Number of goats inspected,	1,360

The annual inspection from which the above tabulation was made took place during the spring months of 1920. Compar-

ing the statistics with those of the year previous we find the following interesting fact: —

While the total number of bovine animals of all ages shows a decrease of 3,391, yet the number of dairy cows shows an unusual increase this year of 3,814. From a strictly dairy point of view this is cause for congratulation. It places the number of dairy cows in the State, 154,407, at a higher point than at any time since 1913, and shows it to be rapidly getting back toward the average number for the past seventeen years, namely, 158,778.

In connection with the references made to the statistics gathered by local inspectors of cities and towns, and the many ways in which such statistics are of value as well as of extreme interest, the importance of inspectors' services, of varied character, in connection with sudden outbreaks of contagious disease, such as rabies, should be mentioned; also their work in identification and release of animals shipped from other States. These officials are a very necessary part of our organization, and according as they are observant, prompt to act, and faithful in performance of their duties, render the Division valuable aid in the execution of its work in control and eradication of disease.

The fact of the statistics showing this year a decrease in the number of swine has been commented upon under the section referring to contagious diseases of that species. We predict that when market conditions again approach the normal there will be a substantial increase in the number of these animals.

The number of sheep in the State has decreased somewhat, undoubtedly influenced, as with swine, by the prevailing high prices of fodder and the low prices of marketed carcasses used for food.

Meetings of inspectors were called at different points in the State, as follows: Pittsfield, November 10; Springfield, November 11; Greenfield, November 12; Worcester, November 16; Boston, November 17.

At these meetings matters of especial interest to the inspectors were discussed, such as general live-stock conditions, the prevalence of contagious diseases among the several species of farm animals, the increasing prevalence of rabies in dogs

and the necessity for prompt control methods in all outbreaks reported.

A question box was instituted at each meeting, and a new feature this year was the illustration by means of lantern slides of a talk on bovine tuberculosis. Charts, showing the yearly progress of the Division's activities in control work of different diseases, were also shown.

Reports of Rendering Companies.

Section 111 of chapter 75 of the Revised Laws, as amended by chapter 243 of the Acts of 1907, requires rendering companies to report to this Division every animal received by them which is found to be infected with a contagious disease, and the information thus furnished is of value in bringing to the attention of the Division occasional cases of these diseases which otherwise would not be known. A table of reports of rendering companies follows: —

Rendering Companies.	Number of Reports.	Number of Cases of Glanders.	Number of Cases of Tuberculosis.	Number of Cases of Actinomycosis.	Number of Cases of Glanders not previously reported.	Number of Cases of Tuberculosis not previously reported.
Ayer Rendering Company,	4	–	4	–	–	–
Edwin G. Baker & Son, Providence, R. I.	1	1	–	–	–	–
C. S. Bard, Haverhill,	3	–	3	–	–	2
Boston Rendering Company, Saugus,	3	3	–	–	–	–
J. H. Castle, Taunton,	1	1	–	–	–	–
Home Soap Company, Millbury,	12	2	21	–	2	5
Lowell Rendering Company,	11	1	18	–	1	2
James E. McGovern, Andover,	3	–	3	–	–	1
New England Rendering Company, Brighton.	9	8	4	–	–	2
Parmenter & Polsey Fertilizer Company, Peabody.	5	–	11	–	–	–
N. Roy, Jr., Fall River,	1	–	1	–	–	–
N. Roy & Son, South Attleborough,	3	–	4	–	–	–
Springfield Rendering Company,	4	5	–	–	–	–
N. Ward Company, Boston,	4	3	–	1	–	–
Totals,	64	24	69	1	3	12

Note. — All the above cases are included in statistics occurring elsewhere in this report.

Receipts of Live Stock at the Stockyards in Boston and Vicinity for Twelve Months ending Nov. 30, 1920.

For several years, at the request of the United States Department of Commerce and Labor, a report of the receipts of all live stock at Boston has been sent to Washington each month. The following table shows the receipts by months for the past year: —

For Month of —	Cattle.	Calves.	Sheep.	Swine.	Horses.
December,	11,169	13,388	20,482	88,062	675
January,	8,733	10,793	8,674	132,816	923
February,	7,526	12,602	4,502	97,221	546
March,	9,062	21,154	5,922	102,367	1,051
April,	8,280	20,011	3,447	52,517	1,180
May,	6,243	20,879	11,361	72,139	1,120
June,	8,135	19,196	25,448	119,243	1,667
July,	5,815	12,547	22,510	78,977	1,548
August,	9,151	15,746	37,732	59,568	2,189
September,	7,603	12,219	34,071	43,930	1,470
October,	10,694	18,226	36,954	44,888	844
November,	16,261	19,411	48,867	81,132	994
Totals,	108,672	196,172	259,970	972,860	14,207

Financial Statement.

Appropriation for the salary of the Director, chapter 225, Acts of 1920,		$3,500 00
Expended during the year for the salary of the Director,		3,500 00
Appropriation for personal services of clerks and stenographers, chapter 225, Acts of 1920,	$7,900 00	
Supplementary appropriation, chapter 629, Acts of 1920,	650 00	
Total amount appropriated,		$8,550 00
Expended during the year for the following purposes: —		
Personal services of clerks and stenographers,	$7,420 59	
Extra clerical and stenographic service,	240 59	
Total expenditure,	$7,661 18	
Unexpended balance,	888 82	
		$8,550 00

Appropriation for services other than personal, including printing the annual report, traveling expenses of the Director, and office supplies and equipment, chapter 225, Acts of 1920,	$4,400 00	
Brought forward from 1919 appropriation,	95 93	
Total amount appropriated,		$4,495 93
Expended during the year for the following purposes: —		
Books and maps,	$96 60	
Express and messenger service,	230 35	
Postage,	631 21	
Printing report,	181 19	
Other printing,	809 95	
Telephone and telegrams,	601 35	
Stationery and office supplies,	686 36	
Typewriter,	58 15	
Expenses of the Director,	531 23	
Total expenditure,	$3,826 39	
Unexpended balance,	669 54	
		$4,495 93
Appropriation for personal services of veterinarians and agents engaged in the work of extermination of contagious diseases among domestic animals, chapter 225, Acts of 1920,		$50,000 00
Expended during the year for the following purposes: —		
Services of regular agents,	$33,521 81	
Services of *per diem* agents,	9,059 00	
Labor hired,	104 00	
Total expenditure,	$42,684 81	
Unexpended balance,	7,315 19	
		$50,000 00
Appropriation for the traveling expenses of veterinarians and agents, chapter 225, Acts of 1920,		$24,000 00
Expended during the year for the following purposes: —		
Traveling expenses of regular agents,	$13,789 75	
Traveling expenses of *per diem* agents,	4,546 42	
Total expenditure,	$18,336 17	
Unexpended balance,	5,663 83	
		$24,000 00
Appropriation for reimbursement of owners of cattle and horses killed, travel, when allowed, of inspectors of animals, incidental expenses of killing and burial, quarantine and emergency services, and for laboratory and veterinary supplies and equipment, chapter 225, Acts of 1920,	$55,000 00	
Brought forward from 1919 appropriation,	1,322 30	
Total amount appropriated,		$56,322 30
Expended during the year for the following purposes: —		
1,016 head of cattle condemned and killed on account of tuberculosis in 1918, 1919, 1920, paid for in 1920,	$42,609 50	
26 horses condemned and killed on account of glanders and farcy in 1919 and 1920, paid for in 1920,	1,375 00	

Supplies for veterinary inspectors,	$432 13	
Laundry,	376 78	
Antiseptics, biologics and disinfectants,	469 70	
Thermometers, needles, syringes, etc.,	775 25	
Ear-tags, punches, chains, etc.,	553 50	
Expenses of killing and burial,	82 90	
Expenses of travel allowed inspectors of animals,	587 95	
Quarantine expenses,	62 25	
Rent of quarantine office,	120 00	
Sundries,	97 95	
Total expenditures,	$47,542 91	
Unexpended balance,	8,779 39	
		$56,322 30

The average amount paid for condemned tuberculous cattle this year is $40.64.

During that portion of the year (eight and one-half months) in which the maximum amount payable by the Commonwealth for any one animal was fixed at $40, the average price paid was $37.91. For the remaining three and one-half months of the year during which the maximum amount of $60 per animal was available, the average amount awarded was $44.90, an increase of $7. The numbers of cattle condemned, however, in this latter period increased more than 90 per cent.

Two hundred and forty-eight claims for reimbursement for cattle condemned and killed as tuberculous during the year, amounting to $10,314.50, remain unsettled, to be paid for on proof.

Claims applying to 5 horses condemned and killed during the year because affected with glanders remain unsettled, the claims not having been proved. The amount of these claims is $250.

There has been received during the year from the sale of hides and carcasses of condemned animals $523.05, and for the testing of cattle for non-resident owners $16.75, a total amount of $539.80.

Respectfully submitted,

LESTER H. HOWARD,
Director.